

# **HPE Activities and Assessments Task Force**

## **High School Health - Nutrition**

**LESSON INFORMATION:** Culminating Activity/Assessment

**Lesson Title:** Nutrition

**Objective:** Students will be informed consumers of nutritional health

**Grade Level:** 9-12

**Grade-Level Expectations:**

### **ME 2A 9-12**

- Assess key nutrients and their specific functions and influences on body processes (e.g., disease prevention) (pg. 22)
- Assess how nutritional needs change throughout the life cycle (pg. 22)

### **ME2B 9-12**

- Prove how a well-balanced diet that is low in fat, high in fiber, vitamins and minerals can reduce the risk of certain disease (pg. 23)
- Investigate and analyze the factors that influence dietary choices (e.g., lifestyle, ethnicity, family, media, and advertising) (pg. 23)
- Analyze food choices and discuss how it should be used to develop a proper diet (pg. 23)

### **ME2C 9-12**

- Apply concepts using food labels to meet dietary needs of individuals for a healthy lifestyle (e.g. diabetes, lactose intolerance, food allergies) (pg. 24)

### **ME1D 9-12**

- Analyze factors (e.g., time, cost accessibility) and benefits (physical and psychological) related to regular participation in physical activity (pg. 21)
- Analyze present fitness levels to create a personal fitness plan which meets current and future needs necessary for the maintenance of total fitness (pg. 21)

### **ME2E 9-12**

- Design a nutritional plan and fitness program based on the relationship between food intake and activity level with regard to weight management and healthy living (e.g. caloric intake, caloric expenditure, weight gain, weight maintenance, and safe weight loss) (pg. 26)

## **Content Standard(s):**

HPE 2 – principles and practices of physical and mental health (such as personal health habits, nutrition, stress management)

HPE 4 – principles of movement and physical fitness

HPE 6 – consumer health issues (such as the effects of mass media and technologies on safety and health)

## **Process Standard(s):**

1.2 – conduct research to answer questions and evaluate information and ideas

1.4 – use technological tools and other resources to locate, select and organize information

3.5 – reason inductively from a set of specific facts and deductively from general premises

3.6 – examine problems and proposed solutions from multiple perspectives

4.1 – explain reasoning and identify information used to support decisions

**Time needed to teach this lesson/unit:** - 3 days – 45 minutes

## **LEARNING TARGETS:**

1. Students will identify/analyze nutrient needs (calorie needs, physical activity level, micro/macro minerals & vitamin needs)
2. Students will develop a physical activity plan to reach personal goal (FITT, THR, BMI)
3. Students will develop a nutritional plan to reach personal goal (Dietary guidelines, labels, food groups)

## **LESSON DESIGN:**

**Lesson Objective:** Students will analyze food and physical activities and determine a plan of action that will promote an active life-style

**Directions:** Students will work in pairs.

1. Provide each pair of students a rubric and a scenario that describes an individual's personal information regarding physical activity, diet, and family history. The scenario includes the individual's personal goals. Students will analyze the information and use resources (websites, books) to determine physical and nutritional needs for each individual. Students should complete the following:
  - Assess weight status using BMI
  - Compare dietary pattern based upon MyPyramid.com recommendations
  - Compare physical activity behaviors based upon FITT principles

2. Based upon the physical and nutritional needs that the individual requires, students will recommend changes to the individual's physical activity and meal plan to address their personal goal.
3. Create a rationale for the recommended changes in the physical and nutritional plan.

### **ASSESSMENT: (directions and how to score or evaluate)**

Using the rubric, evaluate each pair of students' recommended dietary and physical activity changes and the rationale provided for the scenario they were given.

### **DIFFERENTIATED INSTRUCTION:**

For advanced students – complete scenario individually; have them complete their own personal meal and physical activity diary and analyze it and develop a personal goal

Advanced students guide peers during the evaluation and recommendation activity

### **Technology and Materials Needed:**

- Websites
- Calculators
- FITT Principle Chart
- Computer – Internet
- 4 Scenarios
- Rubric

### **Resources:**

[www.kidshealth.org/teen/food\\_fitness/wellbeing/weight\\_height.html](http://www.kidshealth.org/teen/food_fitness/wellbeing/weight_height.html)

[www.mayoclinic.com/health/bmi-calculator/NU00597](http://www.mayoclinic.com/health/bmi-calculator/NU00597)

[www.mypyramid.gov](http://www.mypyramid.gov)

<http://science.education.nih.gov>

<http://fnic.nal.usda.gov/interactiveDRI/>

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**High School Health – Nutrition  
Rubric**

Scenario # \_\_\_\_\_

<b>Factors to Consider</b>	<b>Novice</b>	<b>Proficient</b>	<b>Expert</b>
<b>Assess Weight Status/BMI</b>	Did not assess current weight status	Incorrectly assessed current weight status	Correctly assessed current weight status
<b>Determine # of servings per food group to consume</b>	Did not determine number of servings per food group to consume	Incorrectly determined number of servings per food group to consume	Correctly determined number of servings per food group to consume
<b>Meals</b>	Meals and snacks have changes but not based upon personal goal and rationale is not reasonable	At least 2 meals have recommended changes based upon personal goal and the rationale is reasonable	All 3 meals and snacks have recommended changes based upon personal goal and the rationale is reasonable
<b>Activities</b>	Fitness areas have changes but are not based upon personal goal and rationale is not reasonable	At least 4 fitness areas have recommended changes based upon personal goal and the rationale is reasonable	All 7 fitness areas have recommended changes based upon personal goal and the rationale is reasonable

## Scenarios

Victoria is a 16 year sophomore. She is a member of the cross country team who has type 1 diabetes. She would like to stay healthy in order to excel in district competition. During the past year she has grown 2 inches and has had to change her insulin intake to accommodate the fluctuation of her blood sugar levels. She runs an average of 40 miles per week and cross trains 2 days per week.

She usually eats breakfast at home. Victoria typically buys her lunch at school from the ala carte menu. For dinner Victoria helps her dad and mom cook and they usually eat at home. She usually doesn't snack but drinks a Gatorade after cross country practice. Below are her health information and a typical 1 day food intake chart.

Height: 5'10", Weight: 125#

Medical History: Type 1 diabetes, uses an insulin pump

Family History: Father- high blood pressure; Mother- Gestational diabetes

Personal goal: Qualify for state cross country meet, achieve personal best cross country time, and compete in a half marathon in the spring.

### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	1 cup cooked oatmeal 1/4 cup 1% milk on oatmeal		
Lunch	Cheese sandwich on white bread 1 oz cheese 2 slices bread 1 Tbsp mayo 1 apple Bottle of water		
Dinner	1 cup of spaghetti noodles .5 cup of meat/tomato sauce 1 slice garlic bread 1/12 <sup>th</sup> of a plain cheesecake with ½ cup fresh strawberries Unsweetened tea		
Snack	1 bottle Gatorade		

**Activity Habits**

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	Runs 7 days per week for a total of 40 miles		
Muscular strength	None		
Muscular endurance	Weight training 4x per week		
Flexibility	Daily stretching Yoga in PE every other day		
Anaerobic	Sprint workouts every other day		
Activity of daily living	Rides her bike daily for transportation		

### Scenarios Answer Key

Victoria is a 16 year sophomore. She is a member of the cross country team who has type 1 diabetes. She would like to stay healthy in order to excel in district competition. During the past year she has grown 2 inches and has had to change her insulin intake to accommodate the fluctuation of her blood sugar levels. She runs an average of 40 miles per week and cross trains 2 days per week.

She usually eats breakfast at home. Victoria typically buys her lunch at school from the ala carte menu. For dinner Victoria helps her dad and mom cook and they usually eat at home. She usually doesn't snack but drinks a Gatorade after cross country practice. Below are her health information and a typical 1 day food intake chart.

Height: 5'10", Weight: 125#

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Family History: Father- high blood pressure; Mother- Gestational diabetes

Personal goal: Qualify for state cross country meet, achieve personal best cross country time, and compete in a half marathon in the spring.

#### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	1 cup cooked oatmeal 1/4 cup skim milk on oatmeal		
Lunch	Cheese sandwich on white bread 1 oz cheese 2 slices bread 1 Tbsp mayo 1 apple Bottle of water		
Dinner	1 cup of spaghetti noodles .5 cup of meat/tomato sauce 1 slice garlic bread 1/12 <sup>th</sup> of a plain cheesecake with ½ cup fresh strawberries Unsweetened tea		
Snack	1 bottle Gatorade		

**Victoria's Dietary Analysis:**  
**Calorie need-2600 calories/day**

Food groups	Grains	Vegetables	Fruit	Dairy	Meats/Beans
Recommendation	9 oz	3.5 cups	2 cups	3 cups	6.5 ounces
Victoria's intake	5 oz	½ cup	1 cup	1 1/4 cups	1 ounce
Amount still needed	4 oz	3 cups	2 cups	1 ¾ cups	5.5 ounces

Victoria is underweight and is consuming adequate calories and nutrients to support her personal goal of physical performance success. Her blood sugar imbalance indicates that she is not eating appropriately to meet her needs for growth and to maintain a normal blood sugar. In addition to adding servings from each food group, the following recommendations should also be reflected in the revised plan:

- No whole grains are consumed. At least 4.5 ounces of her grains should be whole grain.
- She does not consume any dark green or orange fruits or vegetables.

**Activity Habits**

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	Runs 7 days per week for a total of 40 miles	Decrease to 4 days/weekly	Overtraining-doesn't allow for peak performance
Muscular strength	None		
Muscular endurance	Weight training 4 times per week	Weight training 3 days/weekly	Allows rest for growth
Flexibility	Daily stretching Yoga in PE every other day	Daily stretching	Increases range of motion and decreases risk of injury
Anaerobic	Sprint workouts every other day	Cross train 2 times weekly	Targets different muscle groups (slow twitch vs. fast twitch)
Activity of daily living	Rides her bike daily for transportation	None	



## Scenarios

Jeff Smith is a 15 year old high school freshman at GHS. He generally oversleeps in the morning so his mom has to drop him off at school. Breakfast typically consists of the water he uses to brush his teeth. At lunch time Jeff usually buys his standard oatmeal cream pie, but he rarely has time to eat because he was too busy visiting with his friends. After school Jeff rides the bus home even though he is not supposed to because he lives less than one mile from school. When he gets home he usually plays video games and snacks on chips and soda. His mom often has to work late so she usually picks up fast food on the way home. Jeff typically eats 5 slices of pizza when she brings pizza home. After dinner Jeff watches TV and does his homework. Before bed he typically has a bowl of ice cream.

Height: 5'8", Weight: 235#

Medical History: High blood pressure

Family History:       Father- High blood pressure, high cholesterol  
                              Mother- High blood pressure, obesity, breast cancer  
                              Paternal grandfather- Deceased from heart attack at 62 years  
                              Maternal grandfather- Deceased from cancer

Personal goal: Lose weight, run a 5K race

### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	None		
Lunch	1 oatmeal cream pie cookie		
Dinner	5 pieces of a 15" pizza 1 12-oz can of Mountain Dew		
Snack	1 large can of Pringles chips 1 12-oz can of Mountain Dew 1.5 cups of chocolate chip ice cream		

**Activity Habits**

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	PE class 2-3x/week-1 <sup>st</sup> semester		
Muscular strength	PE class 2-3x/week-1 <sup>st</sup> semester		
Muscular endurance	PE class 2-3x/week-1 <sup>st</sup> semester		
Flexibility	PE class 2-3x/week-1 <sup>st</sup> semester		
Anaerobic	PE class 2-3x/week-1 <sup>st</sup> semester		
Activity of daily living	None		

## Scenarios - Key

Jeff Smith is a 15 year old high school freshman at GHS. He generally oversleeps in the morning so his mom has to drop him off at school. Breakfast typically consists of the water he uses to brush his teeth. At lunch time Jeff usually buys his standard oatmeal cream pie, but he rarely has time to eat because he was too busy visiting with his friends. After school Jeff rides the bus home even though he is not supposed to because he lives less than one mile from school. When he gets home he usually plays video games and snacks on chips and soda. His mom often has to work late so she usually picks up fast food on the way home. Jeff typically eats 5 slices of pizza when she brings pizza home. After dinner Jeff watches TV and does his homework. Before bed he typically has a bowl of ice cream.

Height: 5'8", Weight: 235#

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                              Maternal grandfather- Deceased from cancer

Personal goal: Lose weight, run a 5K race

### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	None		
Lunch	1 oatmeal cream pie cookie		
Dinner	5 pieces of a 15" cheese pizza 1-12oz can of Mountain Dew		
Snack	1 large can of Pringles chips 1-12oz can of Mountain Dew 1.5 cups of chocolate chip ice cream		

**Jeff's Dietary Analysis:****Calorie need-2400 calories/day**

Food groups	Grains	Vegetables	Fruit	Dairy	Meats/Beans
Recommendation	8 oz	3 cups	2 cups	3 cups	6.5 ounces
Jeff's intake	7 oz	½ cup	0 cups	3 cups	0 ounce
Amount still needed	1 oz	2 1/2 cups	2 cups	0 cups	6.5 ounces

Jeff is overweight but is not consuming adequate quantities from most of the food groups. He is consuming far more than his recommended 360 discretionary calories from the cookies, soda, chips and ice cream. In order to meet his personal goal of weight loss, Jeff will need to reduce the number of discretionary calories that he consumes each day. Recommendations for Jeff's diet should include:

- Consuming at least 3 meals per day.
- Restrict eating to times when he is seated at a table instead of standing to eat or eating in front of the television.
- Consume at least 4 ounces of whole grains per day.
- Add dark green or orange fruits and vegetables to his diet.
- Reduce the number of high fat and high sodium foods. Because Jeff is already has high blood pressure he should reduce his intake of highly processed foods that tend to be higher in sodium. Due to his family history Jeff should also reduce his fat intake as well as lose weight to reduce his risk of heart disease.

**Activity Habits**

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	PE class daily/ 1 <sup>st</sup> semester	Walk home after school daily (20 min)	Decrease risk of heart disease and obesity
Muscular strength	PE class daily/ 1 <sup>st</sup> semester	Free weights 2 x weekly	Increase ability to perform daily activities
Muscular endurance	PE class daily/ 1 <sup>st</sup> semester	Body weight (push-ups, sit-ups)	Increase stamina
Flexibility	PE class daily/ 1 <sup>st</sup> semester	Daily active stretching	Increase range of motion and decrease injury
Anaerobic	PE class daily/ 1 <sup>st</sup> semester		
Activity of daily living	None	Raking leaves, mowing the lawn, walking up/down stairs	Increase his interests to be more actively involved

## Scenarios

Michelle is 40 years old and the mother of 3 children aged 10, 8 and 3 years. After a recent visit to her doctor she was shocked to find her weight has slowly increased 30 pounds in the past 5 years. After her doctor ran some tests, Michelle found out her blood pressure and cholesterol levels are rising. Her mother has osteoporosis and Michelle is concerned about her risk of developing osteoporosis because it can be genetic. Michelle usually skips breakfast because she is too busy making breakfast for her children. She drinks diet soda for the caffeine. Even though she has an hour for lunch she usually goes to a drive-through restaurant and eats at her desk. For dinner Michelle usually fixes meals that require minimal preparation because she has to take kids to their activities and help them with homework. Below is her health information and a typical day's intake for Michelle.

Height: 5'4", Weight: 180#

Medical History: High blood pressure

Family History: Father- High blood pressure, high cholesterol

Mother- osteoporosis, breast cancer

Paternal grandfather- Deceased from heart disease

Personal goal: Lose weight, avoid osteoporosis, fit into a size 8 pair of pants

### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	2 12-oz cans Diet Coke		
Lunch	42-oz Diet Coke Quarter Pound value meal: Quarter Pounder cheeseburger Large fries Hot apple pie		
Dinner	2- 12oz cans Diet Coke ¼ box of Hamburger Helper 1 cup corn with butter 3 slices of bread with 3 teaspoons butter 1 ice cream sandwich		
Snack	4 Diet Cokes 4 Little Debbie Snack Swiss Cakes		

**Activity Habits**

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	Walks .5 mile each Saturday		
Muscular strength	None		
Muscular endurance	None		
Flexibility	Pilates 1x per week		
Anaerobic	None		
Activity of daily living	Gardens flower in the summer		

## Scenarios - Key

Michelle is 40 years old and the mother of 3 children aged 10, 8 and 3 years. After a recent visit to her doctor she was shocked to find her weight has slowly increased 30 pounds in the past 5 years. After her doctor ran some tests, Michelle found out her blood pressure and cholesterol levels are rising. Her mother has osteoporosis and Michelle is concerned about her risk of developing osteoporosis because it can be genetic. Michelle usually skips breakfast because she is too busy making breakfast for her children. She drinks diet soda for the caffeine. Even though she has an hour for lunch she usually goes to a drive-through restaurant and eats at her desk. For dinner Michelle usually fixes meals that require minimal preparation because she has to take kids to their activities and help them with homework. Below is her health information and a typical day's intake for Michelle.

Height: 5'4", Weight: 180#

Medical History: High blood pressure

Family History: Father- High blood pressure, high cholesterol; Mother- osteoporosis, breast cancer; Paternal grandfather- Deceased from heart disease

Personal goal: Lose weight, avoid osteoporosis, fit into a size 8 pair of pants

### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	2-12 oz cans Diet Coke		
Lunch	42 oz Diet Coke Quarter Pound value meal Quarter Pounder cheeseburger Large fries Hot apple pie		
Dinner	2- 12oz cans Diet Coke ¼ box of Hamburger Helper 1 cup corn with butter 3 slices of bread with 3 teaspoons butter 1 ice cream sandwich		
Snack	4 Diet Cokes 4 Little Debbie Snack Swiss Cakes		

**Michelle's Dietary Analysis:****Calorie need-1800 calories/day**

Food groups	Grains	Vegetables	Fruit	Dairy	Meats/Beans
Recommendation	6 oz	2.5 cups	1.5 cups	3 cups	5 ounces
Michelle's intake	3 oz	4 cup	0 cup	0 cups	6 ounces
Amount still needed	3 oz	0 cups	1.5 cups	3 cups	0 ounces

Michelle is overweight but she is not selecting a diet that is consistent with her weight loss and osteoporosis prevention goal. The following recommendations should also be reflected in the revised plan:

- Michelle does not consume any dairy products and consumes soda that does not contribute calcium to the bones.
- Michelle consumes more than the suggested 195 discretionary calories from high sugar and fat foods such as desserts and fast foods.
- Her high fat diet also puts her at a higher risk for heart disease and high blood pressure that are part of her family history.
- No whole grains are consumed. At least 3 ounces of his grains should be whole grain.
- He does not consume any fruits or vegetables other than potatoes. She does not consume any dark green or orange fruits or vegetables.

**Activity Habits**

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	Walks .5 mile each Saturday	Walks .5 mile 3 days per week gradually progressing to 1 mile every other day	Lower heart rate and to decrease obesity, diabetes
Muscular strength	None	Weight training 3 x per week	Increase strength
Muscular endurance	None	Low weights/high reps (tubing/med ball/swiss ball)	Increase core strength
Flexibility	Pilates 1x per week	Stretch at home every day	Increases range of motion and decreases risk of injury
Anaerobic	None	Bent knee push-ups/crunches	Increases upper body strength and core strength
Activity of daily living	Gardens flower in the summer	Walk at lunch Clean the house Push child in stroller for walks	Increase energy levels to be more active with family and friends



## Scenarios

Stu is 62 years old. Stu's wife, who did all of the cooking, has recently passed away. He must now plan and cook his own meals. For breakfast he meets with his old friends everyday at McDonalds to talk about old times. Stu usually eats lunch and dinner at home by himself. Sometimes he skips lunch or dinner because he doesn't feel like making meals just for himself. He does not enjoy eating or being alone. At home he has a toy poodle that keeps him company. He spends a lot of time at home watching TV and reading novels. He really looks forward to Friday night dances at the Senior Center.

Height: 6', Weight: 160 pounds

Medical History:

Family History: Unknown; Adopted as an infant

Personal goal: He wants to continue his active lifestyle in his retirement, be able to play with his grandchildren and enjoy exploring many adventurous vacations for the rest of his life.

### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	2 cups of black coffee 1 sausage McGriddle 1 hash brown		
Lunch	1 can of chicken soup		
Dinner	½ of a 10" pizza		
Snack	10 Oreo cookies ½ cup of honey roasted peanuts		

### Activity Habits

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	Walks his dog for ½ hour every day		
Muscular strength	None		
Muscular endurance	None		
Flexibility	None		
Anaerobic	None		
Activity of daily living	Rakes leaves in the fall; mows his grass		

## Scenarios - Key

Stu is 62 years old. Stu's wife, who did all of the cooking, has recently passed away. He must now plan and cook his own meals. For breakfast he meets with his old friends everyday at McDonalds to talk about old times. Stu usually eats lunch and dinner at home by himself. Sometimes he skips lunch or dinner because he doesn't feel like making meals just for himself. He does not enjoy eating or being alone. At home he has a toy poodle that keeps him company. He spends a lot of time at home watching TV and reading novels. He really looks forward to Friday night dances at the Senior Center.

Height: 6', Weight: 160 pounds

Medical History:

Family History: Unknown; Adopted as an infant

Personal goal: He wants to continue his active lifestyle in his retirement, be able to play with his grandchildren and enjoy exploring many adventurous vacations for the rest of his life.

### Dietary Habits

Meal	Menu	Changes	Rationale
Breakfast	2 cups of black coffee 1 sausage McGriddle 1 hash brown		
Lunch	1 can of chicken soup		
Dinner	½ of a 10" pepperoni pizza		
Snack	10 Oreo cookies ½ cup of honey roasted peanuts		

### Stu's Dietary Analysis:

Calorie need-2200 calories/day

Food groups	Grains	Vegetables	Fruit	Dairy	Meats/Beans
Recommendation	7 oz	3 cups	2 cups	3 cups	6 ounces
Stu's intake	6 oz	1 cup	0 cup	1 cups	6 ounces
Amount still needed	1 oz	2 cups	2 cups	2 cups	0 ounces

Stu's weight is normal but his diet is not adequate to meet his nutrient needs. He consumes more than 290 discretionary calories from foods that are high fat such as fast food and cookies. The following recommendations should also be reflected in the revised plan for Stu:

- No whole grains are consumed. At least 3.5 ounces of his grains should be whole grain.

- He does not consume any fruits or vegetables other than potatoes. He does not consume any dark green or orange fruits or vegetables.
- Because he does not enjoy eating alone, it may be recommended that he begin eating lunch at an area Senior Center where he will get a balanced meal and be with other people.
- Recommended foods should be easy to prepare since Stu has limited food preparation skills.

### Activity Habits

Fitness	Activity	Changes	Rationale
Cardiovascular endurance	Walks his dog for ½ hour every day	Increase exercise to 45-60 min/daily	Increase cardiovascular efficiency
Muscular strength	None		
Muscular endurance	None	Low weights/high reps/2xweekly	Increase bone density
Flexibility	None	Daily stretching	Increase range of motion to prevent injury
Anaerobic	None		
Activity of daily living	Rakes leaves in the fall; mows his grass	Continue active daily living	Continue to lead an active lifestyle